## REMARKS

Claims 1-3, 8, 18-20 and 25-36 are currently pending in this application. Claims 1, 8, 18, 25, 26 and 34 have been amended to more particularly point out Applicant's invention. Claims 9-13, 16 and 17 have been canceled. No new matter has been added to this application.

Rejection of Claims 1-3, 8, 18-20 and 25 under 35 U.S.C. § 103 (a)

The Examiner has rejected claims 1-3, 8, 18-20 and 25 under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 6,075,895 (Qiao) in view of U.S. Patent No. 6.252.599 (Natsuko). The Examiner contends that Qiao discloses a method for determining a gesture. The Examiner correctly notes that Qiao does not teach or disclose a method that remotely issues commands to a medical imaging workstation or that the commands result in translational and rotational manipulation of a medical device. The Examiner contends that Natsuko discloses a method that remotely issues commands to a medical imaging workstation and that the commands result in translational and rotational manipulation of a medical device. The Examiner argues that it would have been obvious to combine the methods of Qiao and Natsuko to create a virtual endoscope that is gesture-controlled. Applicants respectfully traverse the rejection.

The present invention is directed to a method for automatically remotely issuing commands to a medical imaging workstation. A change in a background of an image from a plurality of images is determined. An object in the image is determined. A gesture is identified according to the trajectory of the object. A determination is made as to whether the gesture corresponds to a valid command. If the gesture corresponds to a valid command, the command is executed resulting in translational and rotational manipulation of a medical device based on the command.

Qiao discloses a method for recognizing a gesture of an image of a player. A portion of a background image is removed and replaced with the player's image which is mapped to a number of templates to generate a number of template outputs. The template outputs are analyzed to identify pre-defined gestures that correspond to gestures in the image. Qiao is directed to a player of a video game in which a player's movements are replicated by an image of the player that is portrayed on the game display. As such, if the player creates a gesture that emulates kicking or throwing a ball, that gesture is replicated by the player's image.

Applicants submit that Qiao's use of gestures is different than that of the present invention. Applicants' invention is directed to using a gesture to communicate commands to a medical imaging workstation that are to be executed by a medical device such as a virtual endoscope. The present invention detects a gesture and determines if it corresponds to a valid command which is then automatically executed by the workstation as recited in amended claims 1 and 18. An example of such a command might be rotation or translation of the virtual endoscope. Unlike Qiao, the action performed by the device is not an exact replication of the detected gesture. In the present invention, the gesture is effectively a shorthand instruction that is received and interpreted by the device. Furthermore Qiao does not teach or disclose a system or method that determines whether a gesture corresponds to a valid command and then instructing a device to execute the command resulting in rotation and translation of the medical device. Applicants respectfully submit that Qiao does not teach or disclose Applicants' invention as claimed.

Natsuko discloses an image display apparatus for displaying three dimensional endoscopic images. Natsuko discloses the manipulation of a virtual endoscope using conventional input devices (4) such as a keyboard or mouse. Like Qiao, Natsuko does not teach or disclose a method for automatically remotely issuing commands to a medical imaging workstation. Nor does

Natsuko teach or disclose automatically executing a valid command thereby resulting in rotational and translational manipulation of a medical device. Commands executed by Natsuko are performed based on direct inputs to the input device. The purpose of the present invention is to allow a physician or other person in the room to control the virtual endoscope without having to directly interact with the medical imaging workstation. Because the workstation is normally in a sterile environment, interaction with the workstation is not desirable because of potential contamination issues. The present invention addresses these concerns by allowing the user to interact with the workstation without physically coming into contact with the workstation.

Neither Qiao nor, Natsuko, whether taken alone or in combination teach or suggest the use of gestures to automatically control the manipulation of a device. Natsuko by its very nature epitomizes the prior art and the need to use an input device to control an endoscope. Qiao does not teach or disclose using gestures to control such a device. Qiao is directed to emulating a human's actions for purposes of virtually playing a game. Applicants respectfully submit that the combination of Qiao and Natsuko does not obviate Applicants' invention and request that the rejection of claims 1-3, 8, 18-20 and 25 under 35 U.S.C. § 103 (a) be withdrawn.

Rejection of claims 26 and 34 under under 35 U.S.C. § 103 (a)

The Examiner has rejected claims 26 and 34 under 35 U.S.C. § 103 (a) as being unpatentable over Qiao in view of Natsuko and further in view of U.S. Patent No. 6,332,038 (Funayama). Applicants respectfully traverse the rejection.

Claims 26 and 34 depend upon amended independent claims 1 and 18 which are directed to a method for automatically remotely issuing commands to a medical imaging workstation. Claims 1 and 18 further recite that if a valid command is recognized, the workstation automatically executes the command

resulting in rotational and translational manipulation of a medical device. As discussed above, Qiao does not teach or disclose these limitations.

Funayama disclosed an image processing device that obtains an electronic image and is able to extract a partial image from the original image. Like Qiao and Natsuko, Funayama does not teach or disclose a method for automatically remotely issuing commands to a medical imaging workstation. Nor does Funayama teach or disclose a workstation automatically executing a valid command thereby resulting in rotational and translational manipulation of a medical device. Applicants respectfully submit that neither Qiao nor Natsuko nor Funayama, whether taken alone or in combination, teach or disclose Applicant's invention as recited in independent claims 1 and 18. Claims 26 and 34 being dependent upon independent claims 1 and 18 respectively, are also not taught or disclosed by the combination of references. Applicants request that the rejection of claims 26 and 34 under 35 U.S.C. § 103 (a) be withdrawn.

Rejection of claims 27 and 33 under under 35 U.S.C. § 103 (a)

The Examiner has rejected claims 27 and 33 under 35 U.S.C. § 103 (a) as being unpatentable over Qiao in view of Natsuko and further in view of U.S. Patent No. 5,875,257 (Marrin). Applicants respectfully traverse the rejection.

Claims 27 and 33 depend upon amended independent claim 1 which is directed to a method for automatically remotely issuing commands to a medical imaging workstation. Claim 1 further recites that if a valid command is recognized, the workstation automatically executes the command resulting in rotational and translational manipulation of a medical device. As discussed above, neither Qiao nor Natsuko teach or disclose these limitations.

Marrin discloses an apparatus for continuous sensing of hand and arm gestures. The sensed parameters are transduced into electrical signals indicative of the parameter quantities. The signals are used to control the performance of a musical composition. Like Qiao and Natsuko, Marrin does not

teach or disclose a method for automatically remotely issuing commands to a medical imaging workstation. Nor does Marrin teach or disclose executing a valid command thereby resulting in rotational and translational manipulation of a medical device. Applicants respectfully submit that neither Qiao nor Natsuko nor Marrin, whether taken alone or in combination, teach or disclose Applicant's invention as recited in independent claim 1. Claims 27 and 33, being dependent upon independent claim 1, are also not taught or disclosed by the combination of references. Applicants request that the rejection of claims 27 and 33 under 35 U.S.C. § 103 (a) be withdrawn.

Rejection of claims 30 and 32 under 35 U.S.C. § 103 (a)

The Examiner has rejected claims 30 and 32 under 35 U.S.C. § 103 (a) as being unpatentable over Qiao in view of Natsuko and further in view of U.S. Patent No. 6,501,515 (Iwamura). Applicants respectfully traverse the rejection.

Claims 30 and 32 depend upon amended independent claim 1 which is directed to a method for automatically remotely issuing commands to a medical imaging workstation. Claim 1 further recites that if a valid command is recognized, the command is executed resulting in rotational and translational manipulation of a medical device. As discussed above, neither Qiao nor Natsuko teaches or discloses these limitations.

Iwamura discloses an electronic appliance remote controller which includes a display screen for displaying icons representing possible operations of the electronic appliance. Like Qiao and Natsuko, Iwamura does not teach or disclose a method for automatically remotely issuing commands to a medical imaging workstation. Nor does Iwamura teach or disclose executing a valid command thereby resulting in rotational and translational manipulation of a medical device. Applicants respectfully submit that neither Qiao nor Natsuko nor Iwamura, whether taken alone or in combination, teach or disclose Applicant's invention as recited in independent claim 1. Claims 30 and 32, being dependent

upon independent claim 1, are also not taught or disclosed by the combination of references. Applicants request that the rejection of claims 30 and 32 under 35 U.S.C. § 103 (a) be withdrawn.

Conclusion

Applicant respectfully submits that claims 1-3, 8-13, 16-20 and 25-36, as amended, are in condition for allowance and request that a timely Notice of Allowance be issued in this case. The Examiner is invited to contact the undersigned should he have any questions in this matter.

Respectfully submitted,

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